

DOCUMENTATION FOR EP.DVD, HDOS 2.0 EPSON DEVICE DRIVER

(gegeven hebben betrek-
king op interface
gebonden van J-
Mons.

This device driver contains the following features:

- 1) Allows control of printer options using eight bit codes.
- 2) Option table is easily modified or expanded.
- 3) Full 'SET' options are supported.
- 4) Extremely short machine code (4 sectors).

COMPUTER HARDWARE CONFIGURATION:

Heath/Zenith H/Z 89 computer with WertaComp H89-PPI or Heath WH89-PAL is required to use this driver.

PRINTER HARDWARE CONFIGURATION:

Standard EPSON with parallel interface is used. DIP Switches 1 and 2 are supposed to be in Factory-set Condition. The driver is tested on a MX-100 type III.

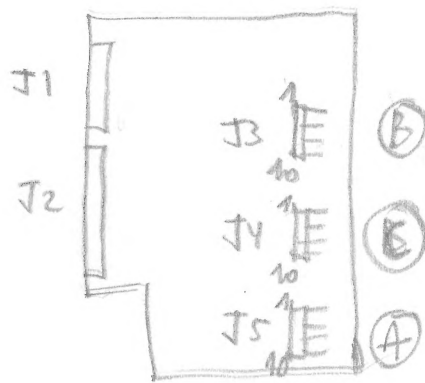
CABLE CONNECTIONS:

EPSON

1 ----- J4-9
2 ----- J5-2
.
.
.
9 ----- J5-9
10 ----- J4-8
12 ----- J4-7
19 ----- J4-1
20 ----- J5-1
.
.
.
27 ----- J5-1
28 ----- J4-1
30 ----- J4-1
32 ----- J4-6

H89-PPI

\STROBE
D0
.
.
D7
\ACKNLG
PE
TWISTED PAIR RETURN OF 1
.
.
.
.
.
TWISTED PAIR RETURN OF 12
\ERROR



NOTE: It is recommended that interface cables be kept as short as possible. 2-meter cable gave no problems so far.

PLUGS USED: EPSON: AMPHENOL 57-30360.

H89-PPI: MOLEX crimp terminal housings # 2695-10/6471-10
crimp terminal # 2759TL/4809TL

DEVICE DRIVER SOURCE:

This driver is contained in the file: EP.ASM.
It can be assembled using the HUG ZSM.

I hope this DVD will be useful to you. Any comments or suggestions regarding this driver are welcome. (I have already been thinking about a H19-simulation using the bit-image option).

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THE NETHERLANDS

P.S. For the needed hardware (at extremely low prices), write me.

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Bram Bouwens
Wetacom Unlimited

I hope this DVD will be useful to you. Any comments or suggestions regarding this driver are welcome. (I have already been thinking about a HiP-simulation using the HiP-mass option).

This driver is contained in the file: EP.ASM.
It can be assembled using the HUB ASM.

DEVICE DRIVER SOURCE:

PLUGS USED: EPSON: AMPHENOL 27-303504
H82-PPI: MOLEX crimp terminal housing # 2692-10/6471-10
crimp terminal # 27597L/48097L

NOTE: It is recommended that interface cables be kept as short as possible.
2-meter cable saves problems as far.

H82-PPI

32 --- JA-8

30 --- JA-1

28 --- JA-1

27 --- JA-1

26 --- JA-1

25 --- JA-1

24 --- JA-1

23 --- JA-1

22 --- JA-1

21 --- JA-1

20 --- JA-1

19 --- JA-1

18 --- JA-1

17 --- JA-1

16 --- JA-1

15 --- JA-1

14 --- JA-1

13 --- JA-1

12 --- JA-1

11 --- JA-1

10 --- JA-1

9 --- JA-1

8 --- JA-1

7 --- JA-1

6 --- JA-1

5 --- JA-1

4 --- JA-1

3 --- JA-1

2 --- JA-1

1 --- JA-1

0 --- JA-1

31 --- JA-1

30 --- JA-1

29 --- JA-1

28 --- JA-1

27 --- JA-1

26 --- JA-1

25 --- JA-1

24 --- JA-1

23 --- JA-1

22 --- JA-1

21 --- JA-1

20 --- JA-1

19 --- JA-1

18 --- JA-1

17 --- JA-1

16 --- JA-1

15 --- JA-1

14 --- JA-1

13 --- JA-1

12 --- JA-1

11 --- JA-1

10 --- JA-1

9 --- JA-1

8 --- JA-1

7 --- JA-1

6 --- JA-1

5 --- JA-1

4 --- JA-1

3 --- JA-1

2 --- JA-1

1 --- JA-1

0 --- JA-1

31 --- JA-1

30 --- JA-1

29 --- JA-1

28 --- JA-1

27 --- JA-1

26 --- JA-1

25 --- JA-1

24 --- JA-1

23 --- JA-1

22 --- JA-1

21 --- JA-1

20 --- JA-1

19 --- JA-1

18 --- JA-1

17 --- JA-1

16 --- JA-1

15 --- JA-1

14 --- JA-1

13 --- JA-1

12 --- JA-1

11 --- JA-1

10 --- JA-1

9 --- JA-1

8 --- JA-1

7 --- JA-1

6 --- JA-1

5 --- JA-1

4 --- JA-1

3 --- JA-1

2 --- JA-1

1 --- JA-1

0 --- JA-1

31 --- JA-1

30 --- JA-1

29 --- JA-1

28 --- JA-1

27 --- JA-1

26 --- JA-1

25 --- JA-1

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7 --- JA-1

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4 --- JA-1

3 --- JA-1

2 --- JA-1

1 --- JA-1

0 --- JA-1

31 --- JA-1

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5 --- JA-1

4 --- JA-1

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2 --- JA-1

1 --- JA-1

0 --- JA-1

31 --- JA-1

30 --- JA-1

29 --- JA-1

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9 --- JA-1

8 --- JA-1

7 --- JA-1

6 --- JA-1

5 --- JA-1

4 --- JA-1

3 --- JA-1

2 --- JA-1

1 --- JA-1

0 --- JA-1

31 --- JA-1

30 --- JA-1

29 --- JA-1

28 --- JA-1

27 --- JA-1

26 --- JA-1

25 --- JA-1

24 --- JA-1

23 --- JA-1

22 --- JA-1

21 --- JA-1

20 --- JA-1

19 --- JA-1

18 --- JA-1

17 --- JA-1

16 --- JA-1

device driver structuur

$$340Q = 224_{10}$$

$$3206 = 308_{10}$$

initialisatie PPI

mode 1

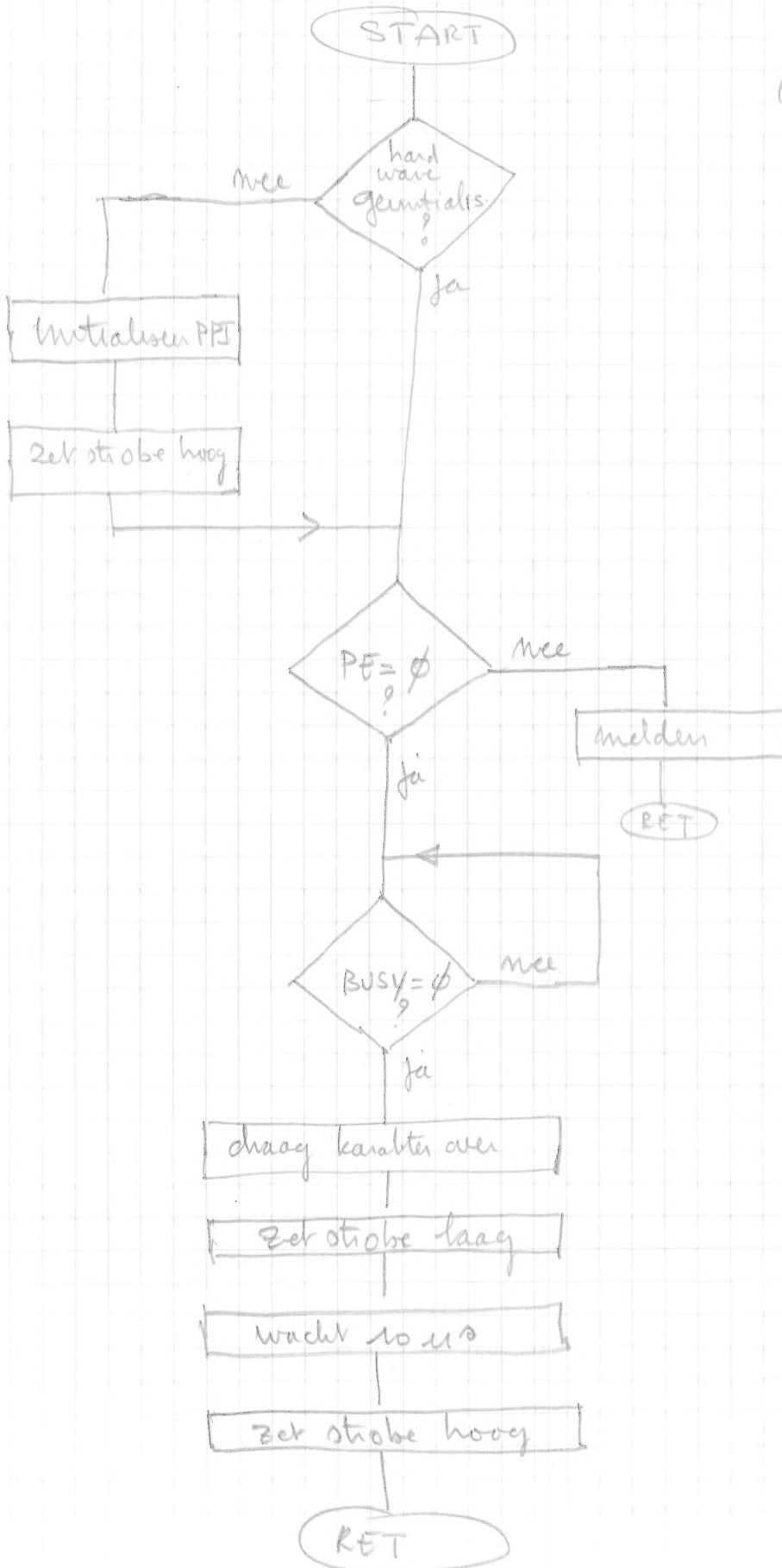
poort A uit
poort B in

poort C D4-D7 uit
D0-D3 in

controle woord

1 0 0 0 0 0 1 1

131₁₀



```

*
*
* XTEXT HOSEQU
* XTEXT ESVAL
* XTEXT ECDEF
* XTEXT SETCAL
$TBRA EQU 193EH
$TYPTX EQU 195EH
NL EQU 10
ENL EQU NL+80H
FF EQU 12
SI EQU 15
**
** POORTDEFINITIE
**
DEF.POR EQU 340Q
**
** CODE HEADER
**
DVDFLV EQU 307Q
DVD.ENT EQU 200H
*
* CODE PIC
$ EQU *+DVD.ENT-6
DB DVDFLV Flag to HDOS as DVD
DB 04H Capable of Write Only
DB 01H Mounted Unit Mask
DB 01H Maximum Number of Units
DB 04H Subcapability flags units 0 - 7
DS 7 Units 1 - 7 Flags
DB 0 geen SET !
DS $-*

```

```

*****
*
* GEDVD ENTRY POINT
*****

```

```

*
* Ruimte moet absoluut verspild worden !
* Entry point moet deelbaar zijn door 100H.
*
**

```

```

** ENTER PROCESSOR
**

```

```

* ENTRY: (A) = process code
* (BC) = byte count
* (DE) = memory address
* EXIT: 'C' clear if ok
* 'C' set if error
* (A) = error code
* USES: ALL

```

```

* START EQU *
* DDDVD CPI 11 max. code !
* JNC DDILR illegal process code

```

```

* CALL $TBRA enter processor
* DB DDILR-* Read
* DB DDWRI-* Write
* DB DDDDA-* Read Regardless
* DB DDILR-* Open for Read
* DB DDOPW-* Open for Write
* DB DDDDA-* Open for Update
* DB DDCLO-* Close
* DB DDNOT-* Abort
* DB DDNOT-* Mount Device
* DB DDNOT-* Load Device Driver

```

```

** DDNOT - Nothing
**
* DDNOT XRA A
* RET

```

```

** DDILR - Illegal Request
**
* DDILR MVI A,EC.ILR
* STC
* RET

```

```

** DDDDA - Issue Device Driver Abort To Request
**
* DDDDA MVI A,EC.DDA
* STC
* RET

```

```

** DDOPW - Open (write)
**
* DDOPW LDA TDD.INI
* ANA A
* RNZ
* CALL I8255A initialize PPI
* CALL CENTRON initialize printer
* MVI A,1
* STA TDD.INI

```

```

* MVI A,8
* STA TDD.TAB ← de tabellen wordt met 8 geladen
* RET

```

```

** DDCLO - Close
**
* DDCLO CALL CENTRON strobe altijd hoog zetten
* XRA A
* RET

```

```

** DDWRI - Write Data To Printer
**
* DDWRI LDA S.CAADR+1 check for interrupt
* ANA A
* RNZ abort, claim all done
* MOV A,B
* ORA C check byte count left
* RZ all done
* LDA D
* CALL TCH druk af
* INX D inc pointer
* DCX B dec count
* JMP DDWRI

```

```

*****
* SUBROUTINES
*****

```

```

** TCH - Type Character
**
* ENTRY: (A) = character
* EXIT: none
* USES: A,F

```

```

* TCH EQU *
* PUSH PSW
* IN DEF.POR+2
* ANI 00000010B C-pook bit-2
* JZ $TYPTX
* DB NL,'Jos, je printer staat off-line'
* DB NL,'of het papier is op !',ENL
* TEST IN DEF.POR+2
* ANI 00000010B
* JNZ TEST
* CALL $TYPTX
* DB NL,'Bedankt! Nu kan ik eindelijk aan het werk !',ENL
* BUSY IN DEF.POR+2
* ANI 00000001B C-pook - bit 1
* JNZ PSW
* POP PSW get character
* CPI 12Q is het een LF ? Dan vervangen door CR !
* JE CRLF
* CPI 011Q
* JE TAB is het een TAB ?

```

```

* OUTCAR OUT DEF.POR is het een afdrukbaar teken ?
* CPI ' ' nee? Dan TAB-teller bijwerken
* JC TIJD
* LDA TDD.TAB ← ja
* DCR A
* JNZ TIJD1
* MVI A,8
* STA TDD.TAB
* TIJD1 MVI A,24 tijd verliezen !
* WACHT1 DCR A
* JNZ WACHT1
* X MVI A,0 strobe genereren
* OUT DEF.POR+2
* MVI A,32
* WACHT2 DCR A
* JNZ WACHT2
* X MVI A,10000000B
* OUT DEF.POR+2
* WACHT3 MVI A,32
* DCR A
* JNZ WACHT3
* RET

```

```

* VERWERKING VAN DE CR + LF
*
* CRLF MVI A,8 TAB-teller klaar maken !
* STA TDD.TAB
* MVI A,15Q LF vervangen door CR !
* JMP OUTCAR

```

```

* VERWERKING VAN DE TAB
*
* TAB MVI A,' '
* CALL OUTCAR
* LDA TDD.TAB
* CPI 8
* JNE TAB ← mocht dat niet 0 zijn want TAB wordt of geteld
* RET

```

```

* INIT - initialiseer de 8255
*
* I8255A MVI A,10000011B
* OUT DEF.POR+3
* RET

```

```

* CENTRON - zet de strobeline van de centronics-printer hoog
*
* CENTRON MVI A,10000000B
* OUT DEF.POR+2
* RET

```

```

* JUMP DDWRI
* TDD.UNT - tabel van konstanten

```

```

* TDD.UNT DB 0 unit number
* TDD.INI DB 0 unit initied
* TDD.TAB DB 0

```

```

* DW 'RL'
* DS 64
* END

```

```

* Form length in inches

```

```

* (27) C (0) (n)
* CHR(27) "C" CHR(0) CHR(n)

```

```

* 1 ≤ n ≤ 22

```

```

* 12?

```

```

* Interface CENTR

```

```

* 1 strobe 0,5us pulse

```

```

* 2 data 1...8

```

```

* 10 ACK 12us pulse

```

```

* 11 Busy high = printer cannot receive data

```

```

* High possible in follow cases

```

```

* 1) during data entry

```

```

* 2) during printing operation

```

```

* 3) OFF-line status

```

```

* 4) during printer error status

```

```

* 12 PE high = printer out of paper

```

```

* 19...30 GND

```

```

* 31 INIT low: printer controller is reset - printer buffer cleared pulse with > 50us

```

```

* 32 ERROR low in 1 state - error state

```